

INTEGRATED LEAD SUSPENSION FOR HIGH DENSITY DRIVE

ABSTRACT OF THE DISCLOSURE

The integrated lead suspension assembly comprises several improvements. An oversized terminating pad for the electrical traces and a smaller adjacent insulation layer on the flexure assembly enable laser solder ball bonding of the pads to the read/write terminal contacts on the slider without clamping operation. Consequently, the tip of the load beam can be made narrow for a structure that provides for head loading and unloading functions, which improves the dynamic performance of the suspension assembly. The flexure assembly is configured such that it requires no permanent bending in its forming process, and any permanent bending required is done to the load beam. The limiter that limits the travel of the flexure assembly is formed on the load beam and it is bent to the functional position only after attachment of the flexure assembly to the load beam. The limiter is configured and positioned at the leading edge side of the slider to optimize the unloading process and to minimize the possibility of disengagement of the limiter and the flexure assembly during high shock environment. Asymmetric backing branches are provided for the read and write traces in the flexure assembly located at the hinge area of the load beam, the widths of which are sized to optimize the dynamic signal performance of the read and write traces without impact on the vertical stiffness of the suspension. Low profile flanges at 30°- 60° that bend from the plane of the load beam are provided along the edges of the load beam to optimize bending stiffness and flow induced vibration. Dimples are provided along the load beam to facilitate insertion of a plastic head separation tool.